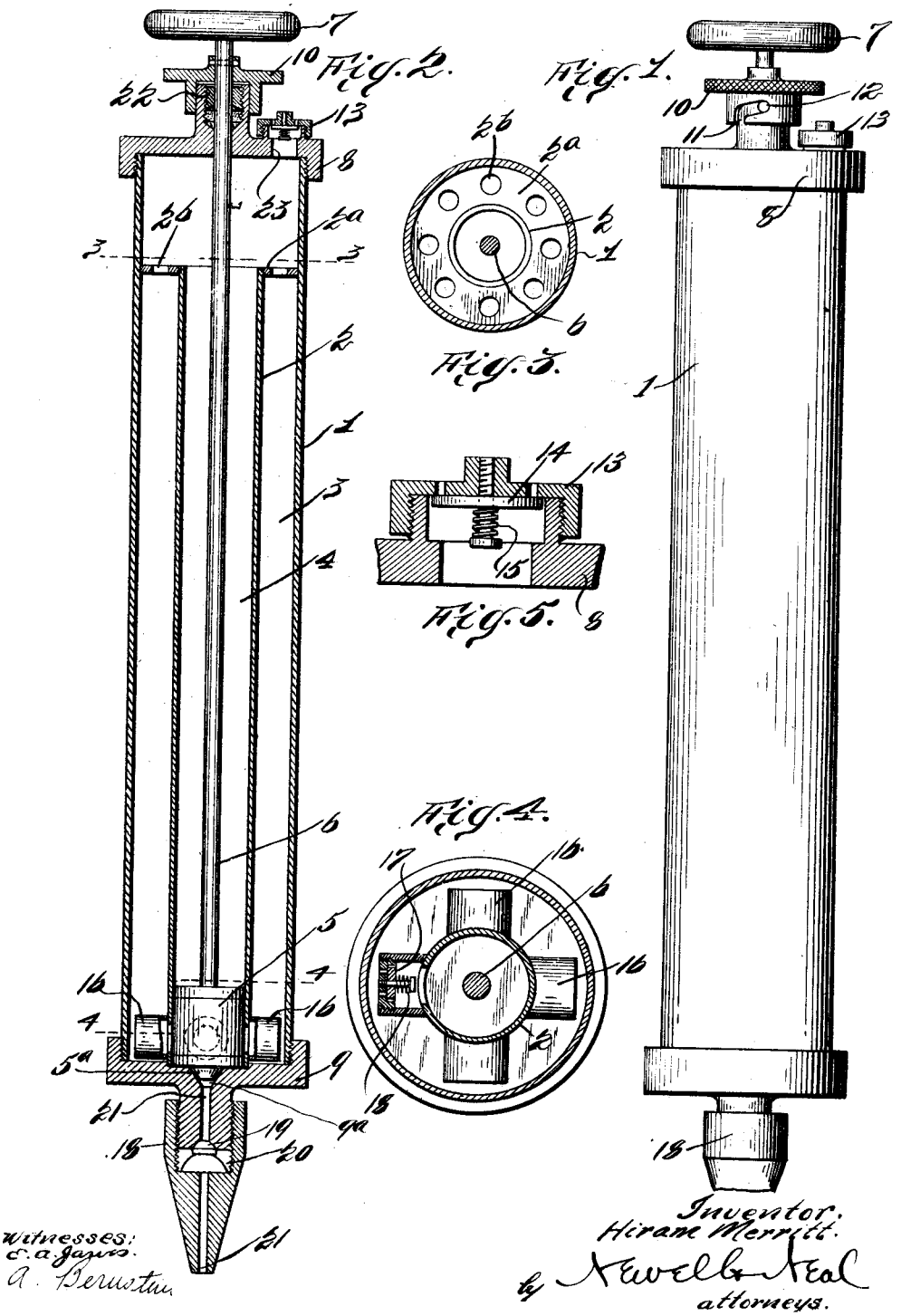
H. MERRITT.

FIRE EXTINGUISHING SYRINGE.

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1,067,999.

Patented July 22, 1913.



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UNITED STATES PATENT OFFICE.

HIRAM MERRITT, OF NEWBURGH, NEW YORK.

FIRE-EXTINGUISHING SYRINGE.

1,067,999. Specification of Letters Patent. Patented July 22, 1913.

Application filed April 12, 1912. Serial No. 690,258.

To all whom it may concern:

Be it known that I, HIRAM MERRITT, a citizen of the United States, residing at Newburgh, New York, have invented certain new and useful Improvements in Fire-Extinguishing Syringes, of which the following is a clear, full, and exact description.

This invention relates to a fire extinguishing syringe of the reservoir type, containing a reserve supply of fire extinguishing fluid which may be ejected by a series of pumping strokes.

One of the objects of my invention is to improve the general construction of such devices whereby the operation is made more simple and efficient, and whereby the apparatus when not in use will be closed against leakage. The fire extinguishing fluid commonly employed in devices of this kind such as carbon tetrachlorid has an obnoxious smell, and therefore any drip or leakage from the syringe when not in use is objectionable.

The invention is particularly applicable to the type of fire extinguishers which comprises a reservoir and a barrel or pump cylinder in communication with the reservoir.

One of the objects of my invention is to reduce the force necessary to drive the piston on the forward stroke and to accelerate the filling movement of the liquid into the pump chamber on the return stroke.

My invention therefore comprises the general combination of parts and details of construction hereinafter specified, and it is to be understood that all variations within the spirit of my invention are broadly embodied in the appended claims.

In the preferred embodiment shown in the drawings, Figure 1 is an elevation of the device with the portion of the nozzle cut away; Fig. 2 is a vertical section of the same complete; Fig. 3 is a cross section through the line 3—3 of Fig. 2; Fig. 4 is a cross section through line 4—4 Fig. 2; and Fig. 5 is an enlarged detail of the charging cap and inlet valve.

Referring more particularly to the drawings, the syringe as a whole comprises an outer cylindrical shell 1 having within the same a tubular partition 2 spaced from the inner wall of the shell so as to form two separate inner compartments, the central compartment or pumping chamber 4 and the annular compartment 3 outside thereof, all as shown clearly in Fig. 2. A perforated partition 2^a at the upper end of compartment 3 provides free communication between the reservoir to this end of the pumping chamber 4, as shown. At the other end of compartment 3 are preferably located one or more inlet valves 16 providing communication between the reservoir and pumping chamber at this end. As shown, each valve 16 preferably consists of a spring pressed disk 17 normally held closed by spring 18 and adapted to be opened inwardly by pressure from the outside and closed by pressure from the inside.

The ejecting end of the syringe is provided with the usual closure or head 9 preferably screw threaded on the shell 1 and having therethrough the outlet passage 21. A tapered nozzle 18 is also preferably screw threaded on the end of closure 9 having therethrough a continuation of outlet 21 and also provided with a spring pressed valve plug 19 normally closing outlet passage 21 under pressure of spring 20 as shown. It is obvious that this valve 19 will give way to an outward pressure from within the syringe so that the contained fluid may be easily ejected. The syringe is charged through opening 23 at the upper end of shell 1 which is covered by the charging cap 13 preferably screw threaded on the closure head 8 as shown. The cap 13 is also provided with a spring pressed inlet valve 14 normally held closed by spring 15, whereby air is admitted to the interior of said shell to maintain normal atmospheric pressure within the cylinder during the pumping action.

Working within the pumping chamber 4 is an ordinary form of piston 5 having rod 6 extending through closure head 8 to a handle 7. The sliding joint of rod 6 is closed against leakage by the usual packing arrangement 22, and said rod 6 is also preferably provided with a bayonet collar 10 fixed thereto as shown in Fig. 2, and adapted to coöperate with a pin 12 upon closure 8 as shown in Fig. 1. The piston 5 is also preferably provided with a tapered projection 5^a at its lower end, adapted to seat within a tapered socket 9^a of head 9. The piston rod 6 is adapted to be forced downwardly and firmly locked in position by means of its bayonet joint 11, 12 to firmly seat the said tapered projection 5^a within socket 9^a and thus seal the shell against any possible leakage at either end.

The operation of the device is already apparent from the description heretofore given, but may be briefly recounted as follows: The entire space within shell 1 may be first charged with fire extinguishing liquid through inlet 23. The upward stroke of piston 5 both sucks liquid through valve 16 from the reservoir 3 into pumping chamber 4, and also forces the liquid behind piston 5 around through openings 2^b of partition 2^a into reservoir 3, so as to mechanically force the liquid in front of piston 5. A downward stroke of the piston of course ejects the contents of the pumping chamber 3 through outlet 21, and this operation may be repeated until the entire contents of both pumping chamber and reservoir are exhausted. It will be observed that the present construction not only provides for a pumping action by suction upon the withdrawal of piston 5, but also by providing free communication between the central pumping chamber 4 and reservoir 3, a force pumping action takes place behind the piston 5 so as to more effectually bring the liquid in front of the piston. This force pumping action of course takes place behind piston 5 whether air or liquid is within said central pumping chamber.

What I claim as new is:—

1. A fire extinguishing hand-syringe comprising in combination a reservoir, a pumping chamber adjacent thereto, a piston adapted to be reciprocated repeatedly within said pumping chamber to empty the same, said pumping chamber communicating with said reservoir at the forward and rear ends of said pumping chamber, and an air inlet valve for admitting air on the forward stroke of said piston and preventing an outward flow of air on the back stroke of said piston whereby the air in the rear of said reservoir is compressed, and the flow of liquid accelerated from said reservoir into the forward end of said pumping chamber, and means for preventing a return flow of the liquid from the forward end of said pumping chamber to said reservoir on the forward stroke of said piston.

2. A fire extinguishing hand-syringe comprising in combination a reservoir, a pumping chamber adjacent thereto, a piston adapted to be reciprocated repeatedly within said pumping chamber to empty the same, said pumping chamber communicating with said reservoir at the forward and rear ends of said pumping chamber, and an air inlet valve for admitting air on the forward stroke of said piston and preventing an outward flow of air on the back stroke of said piston whereby the air in the rear of said reservoir is compressed, and the flow of liquid accelerated from said reservoir into the forward end of said pumping chamber, and valves between said reservoir and the forward end of said pumping chamber opening from said reservoir to said pump chamber and preventing a return flow of the liquid from said pump chamber to said reservoir on the forward stroke of said piston.

3. A fire extinguishing hand-syringe comprising in combination an outer shell normally closed to the atmosphere and having within the same a reservoir, a pumping chamber adjacent to said reservoir, a piston adapted to be reciprocated repeatedly within said pumping chamber to empty the same, said pumping chamber communicating with the reservoir at the forward and rear ends of said pumping chamber, an air inlet valve for admitting air on the forward stroke of said piston and preventing an outward flow of air on the back stroke of said piston whereby the air in the rear of said reservoir is compressed and the flow of liquid accelerated from said reservoir into the forward end of said pumping chamber, means for preventing a return flow of the liquid from the forward end of said pumping chamber to said reservoir on the forward stroke of said piston, said syringe having a discharge outlet, and means in said discharge outlet for preventing an outward flow of the liquid on the backward stroke of said piston.

4. A fire extinguishing hand-syringe comprising in combination an outer shell normally closed to the atmosphere and having within the same a reservoir, a pumping chamber adjacent to said reservoir, a piston adapted to be reciprocated repeatedly within said pumping chamber to empty the same, said pumping chamber communicating with the reservoir at the forward and rear ends of said pumping chamber, an air inlet valve for admitting air on the forward stroke of said piston and preventing an outward flow of air on the back stroke of said piston whereby the air in the rear of said reservoir is compressed and the flow of liquid accelerated from said reservoir into the forward end of said pumping chamber, and a valve in connection with said discharge outlet to prevent dripping of the liquid through said discharge outlet on the backward stroke of said piston.

Signed at Newburgh, N. Y., this 10th day of April 1912.

HIRAM MERRITT.

Witnesses:
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